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ABSTRACT

The progress of the indicators project of the U.S. Department of Education is reported as a follow-up to a 1985 Department of Education publication, "Indicators of Education Status and Trends," which attempted to identify those items that could be considered as significant indices of the health of education in the United States. In addition to a working definition of an indicator, three categories of indicators are identified: outcomes, resources, and context. The indicators project has involved identification and assessment, analysis, and development. Identification and assessment involves search for data that meet the working definition of an indicator. Examples of surveys/studies that have produced indicators are considered, including the Fast Response Survey System, the National Assessment of Educational Progress, the Second International Mathematics Study, and the Gallup Poll. Examples of indicators that entail extensive analysis are also provided, including scores on the Scholastic Aptitude Test and the American College Testing Program. Development work of the indicators project has produced a new indicator, "school climate," and a major developmental effort has focused on postsecondary education indicators. Future directions for the indicators project are discussed. Appended is a summary of a November 1985 meeting of the Advisory Panel on Postsecondary Education and a list of advisory panel members. Tables and figures are provided. (SW)

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THE EDUCATION INDICATORS PROJECT IN THE U.S. DEPARTMENT OF EDUCATION

Joyce D. Stern

April 1986

Education
Center for Statistics
U.S. Department of Education

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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INTRODUCTION

In January, 1985, the Department of Education issued the publication entitled, Indicators of Education Status and Trends. This report was billed as a draft edition on which public comment was invited and received. The Department, and its statistical unit in particular, had been issuing data publications for many years which reported findings from its own education surveys and related findings from research by the Census Bureau, the Bureau of Labor Statistics, and other government agencies, as well as from various education associations. The indicators publication, however, was unusual. It attempted to isolate from the mass of data those items which could be considered to be significant indices of the health of the Nation's educational enterprise.

The publication was the product of an intra-departmental work group with leadership from the Office of the Under Secretary. The indicators project as it has come to be called now has been "institutionalized," as it were. It is housed within the revamped Center for Statistics (CS) in the newly reorganized Office of Educational Research and Improvement (OERI) and is administered out of a division appropriately called the Condition of Education Division. The author of this paper is presently the team leader of the indicators project and this paper is essentially a progress report on the Center's indicator work. It addresses in some depth the background of the project, current staff efforts, and some long range plans.

BACKGROUND

Victor Hugo wrote of the power of an idea whose time has come. That is an apt phrase for the present interest in social indicators. Wags might retort that indicator development has come and gone -- and come again. Broadly speaking, they would be right. To be sure, the interest in measuring aspects of education is not new. It has been with us at least since Congress established the first Department of Education back in 1867. That governmental body was charged specifically to report on "... such statistics and facts as shall show the condition and progress of education..." But it can confidently be maintained that the present work on education indicators is something unique, born in the present climate of reform and inspired by a concern with excellence.

Just as the cornucopia of reports on education that appeared in 1983 and 1984 resulted from two to three years of professional research and public discussion, so too, the groundwork for the Department's work on indicators began well before the report was issued. In 1982, staff in the National Center for Education Statistics (NCES) began a dialogue with members of the Education

Leaders Consortium (ELC) to outline a list of measures that would gauge the condition of education in this country, particularly student and school performance. (The Education Leaders Consortium is a group comprised of the executive directors of 20 national education organizations with an education administration or policy setting focus.) These early discussions determined that there should be measures of student outcomes, teacher competence and attitudes, school environment and community context and that the measures should regularly be reported to the Nation. In retrospect, these were seminal discussions, for they have set the parameters of subsequent indicator work.

With the issuance of "A Nation at Risk" three years ago, the national spotlight focused on outcomes and measurement. But it soon became painfully obvious that we could not answer the kinds of questions policymakers and the public were asking about educational results. In this context, the decision was made to accelerate the work on indicators. For this purpose, responsibility was shifted to the Department's Office of the Under Secretary. There, the intra-departmental work group was formed under the direction of Emerson Elliott and Ron Hall, then of the Under Secretary's Issues Analysis Staff. To broaden the discussion of indicators, the group contacted a number of education associations, State assessment directors, teacher representatives, and the staffs of State legislature and governor organizations. To find likely indicators, the group combed the literature for results from research and surveys carried on both inside and outside of the Department. Furthermore, the group developed a working definition of an indicator. The definition against which all possible education indicators have been tested since is from the 1985 publication (p.vi). An indicator --

- consists of statistically valid information related to significant aspects of the educational system and can be a single valued statistic or a composite index:

- provides a benchmark for measuring progress or regression over time, or differences across geographical areas or institutions at one point in time, such that substantive inferences can be drawn from presentation of the data;

- is meant, where appropriate, to be representative of policy issues or aspects of education that might be altered by policy decisions;

- can be easily understood by a broad array of citizens concerned with education;

- is relatively reliable data and not subject to significant modification as the result of response errors or changes in the personnel generating it.

Finally, the work group conceptualized the grouping and presentation of those indicators mutually decided upon. Three major categories emerged: Outcomes, Resources, and Context.

Outcomes are a natural concern in this reform climate when lawmakers and taxpayers, parents included, are looking for measurable results of their investments of time and money in education. But there is a serious imbalance in current data bases between outcome and input data. Essentially we have little if any good data on the product of schooling. Indeed, the current debate centers on what types of outcomes should be tracked and how to measure them so that proper comparisons can be made and correct inferences can be drawn.

In the absence of ideal data, the group gathered what was available. Here the report described the ever popular SAT/ACT scores but also featured the findings over time of the National Assessment of Education Progress (NAEP) tests in reading, math, and science with 9-, 13-, and 17-year old students. (NAEP has its drawbacks as an indicator in that it presently does not yield State comparisons. Moreover, tests have been conducted on an erratic schedule and the testing methodology has changed, making problems when comparing the results of successive periods of testing.) In addition, from the Second International Mathematics Study, the report contrasted the performance of U.S. 8th grade and 12th grade students with the mean score of comparable students in the 18 countries/provinces participating in the study.

The definition of outcomes included what the group termed transitions, or results of schooling apart from quantitative measures of student performance on tests. The indicators selected were high school graduation rates, post-high-school activities, civic participation of 18-24 year olds, and the need for remedial education in college.

Resources were seen as both fiscal and human investments in the enterprise. The report traced more than a decade of almost uninterrupted growth in per-pupil expenditures and also presented the "fiscal effort" for public elementary and secondary schools since 1920. The fiscal effort is determined by a formula which measures combined local, State, and Federal revenues for education in relation to personal income and the student population. The human resources indicators almost exclusively described teachers. In addition to teacher-pupil ratios, they addressed teacher supply and demand, teacher earnings in relation to earnings of others in the labor force, and, as a proxy for quality, teacher verbal ability as measured by SAT scores.

Recognizing that outputs (outcomes) do not merely result from inputs (resources) but are affected by environmental factors, the work group determined that any report on indicators should include a description of the milieu in which American education is taking place. Indicators in this Context category ranged from a presentation of students enrolled by age, to a report on the Carnegie units required for graduation in each State. In addition, the report presented an unusual "education service need index" by State. It also provided a placeholder discussion of school environment since no adequate measure, and hence no indicator, of it exists.

All in all, 20 indicators were featured in the 1985 publication, selected from a much larger number that were identified and discussed by the work group. With this document, the Department entered the field so long dominated by the National Science Foundation (NSF) with its Science Indicators publication, and joined forces intellectually with the National Academy of Science (NAS) and its search for indicators of precollege science and mathematics.

A positive reception of the indicators publication strongly suggested that defining, identifying, and reporting indicators should move from the status of a special project to that of an on-going enterprise. For that purpose it was returned to NCES and two important decisions are made. First, that a staff devoted to this effort would be recruited, and secondly, that reporting on indicators would become a regular assignment of the Center for Statistics. Staffing commenced last year and was concluded in November. In addition to the author, the staff includes a demographer, a sociologist, and a social psychologist.

As for the method of reporting on indicators, it was decided to devote the annual Condition of Education report to this purpose, and in addition to the indicators, feature in it essays on current education concerns. A staff of four composes another team to research and prepare the essays. In fact, the two teams share the work on indicators and essays, i.e., indicator staff will write some of the essays and essay team members are charged with preparing certain indicators. The two team leaders of the indicators and essays staffs also serve as co-editors for the revamped Condition of Education report.

CURRENT ACTIVITIES

It is now over a year since the Indicators of Education Status and Trends was issued. Considerable work has been undertaken by

the staff to move the enterprise forward. That effort can roughly be described under the headings of (a) identification and assessment, (b) analysis, and (c) development. Before describing these efforts, a caveat is in order. A staff member working on a given indicator may operate across all three areas, because identification and assessment, analysis, and development as they pertain to indicators are not always distinct activities. With this caveat, what follows now is an overview of what the staff has accomplished this year, work which will soon be seen in the forthcoming edition of the Condition of Education. It is presented using the framework of the three major sectors of indicator activity.

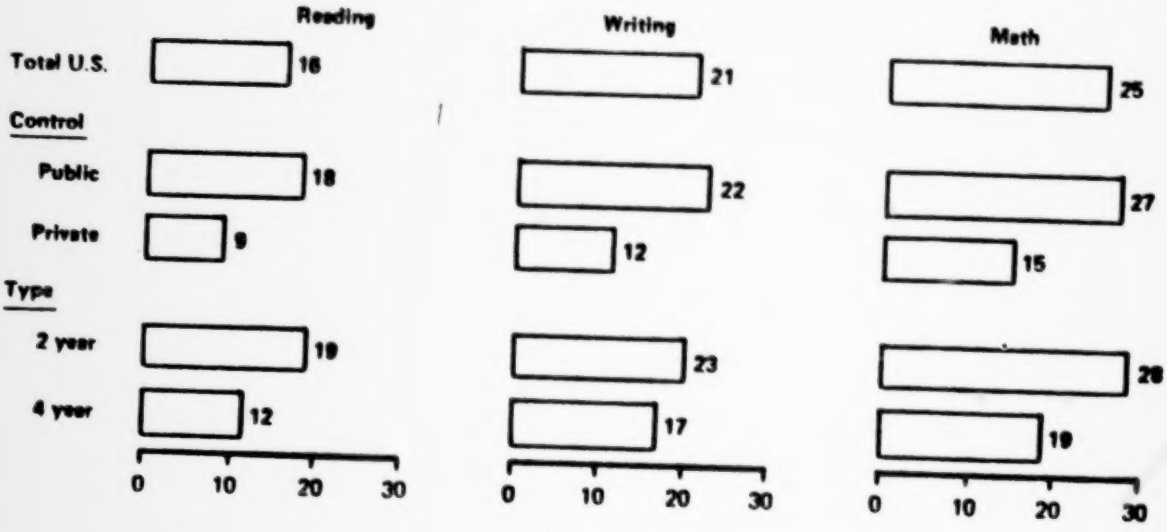
Identification and Assessment

This element of the indicator project deals basically with the search for data that meet the working definition of an indicator. It entails sifting through the literature, studying research results, and otherwise identifying from the mass of data dealing with education what the staff calls indicator candidates. We will often follow the spoor of some interesting research, only to conclude that the results do not constitute an indicator. Something is rejected as an indicator candidate generally if the sample is too small, the quality is poor, the response rate is too low, there was a non-representative sample, or it is a one-time study with no plans for replication.

However, lack of suitable data has forced us to make exceptions and we do, for example, use one-time studies. By way of illustration, we have found extremely significant items in the Center's Fast Response Survey System (FRSS). This system does not carry out surveys that are always regularly replicated. Rather, its purpose is to respond to requests from the Department for quickly needed information, usually for policy purposes.

The results of one of those surveys became an indicator in the 1985 publication and received considerable attention. It was a survey of institutions of higher education to assess the growth of student enrollment in remedial education courses between 1978 and 1984. The findings are available by subject and institutional characteristics and are considered so significant, that they probably will be represented in the 1986 edition of the Condition of Education even though there has been no update. A chart depicting one aspect of this indicator from the 1985 publication follows.

Percentage of Freshmen Enrolled in Remedial Courses in Institutions of Higher Education by Subject: 1983-84



Source: Fast Response Survey System.

- Sixteen percent of college freshmen are enrolled in remedial reading, 21 percent are in remedial writing, and 25 percent are in remedial math. These percentages vary by control, type, geographic region, and selectivity of the college.
- 82 percent of higher education institutions with first-year programs offered remedial courses in reading, writing, or math in 1984. Of these, 63 percent had remedial enrollment increases of 10 percent or more, 33 percent had relatively stable remedial enrollment, and only 4 percent had decreases of 10 percent or more.

Another example of the FRSS work we are considering for publication is information on school discipline problems from a 1985 survey of principals and school administrators. Recent data on crime and violence in the schools are sparse and the issue is so important that even though they are from a one-time survey, we probably shall feature the results of this survey in our next edition.

These data will be supplemented by information on drug use in high school. The draft table which follows is adapted from Use of Licit and Illicit Drugs by American High School Students 1975 - 1984, Lloyd D. Johnston, Patrick M. O'Malley, and Jerald Bachman, U.S. Department of Health and Human Services, No. (ADM) 85-1394, Washington, D.C., 1985.

Trends in the percent of high school seniors who have ever used drugs, by type of drug.

Drug:	Class of : 1975	1977	1979	1981	1983	1984
Marijuana/Hashish	47.3	56.4	60.4	59.5	57.0	54.9
LSD	11.3	9.8	9.5	9.8	8.9	8.0
PCP a/	NA	NA	12.8	7.8	5.6	5.0
Cocaine	9.0	10.8	15.4	16.5	16.2	16.1
Heroin	2.2	1.8	1.1	1.1	1.2	1.3
Alcohol	90.4	92.5	93.0	92.6	92.6	92.6
Sample Size (N)	9400	17100	15500	17500	16300	15900

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a/ Data based on a single questionnaire form. N is one-fifth of N indicated.
SOURCE: Use of Licit and Illicit Drugs by America's High School Students 1975-1984. Lloyd D. Johnston, Patrick M. O'Malley, and Jerald Bachman, D.S. Department of Health and Human Services, No. (ADM)85-1394, Washington, D.C. 1985.

A well known and popular sequence of indicators are those from the National Assessment of Educational Progress (NAEP), the Congressionally mandated testing of student abilities that has been conducted periodically for the last 15 years. The 1985 indicator publication printed findings over time on reading, math, and science tests given to nationally representative samples of 9-, 13-, and 17- year old students. The outcome of

the latest reading assessment (1983-84) has provided us with an entirely new indicator in 1986. It is the "Percent of Students in Five Reading Proficiency Levels," adapted from the NAEP publication, The Reading Report Card, published by the Educational Testing Service (ETS). (ETS is the current grantee that conducts NAEP testing for the Department of Education.) However, given the topic of this session, I have chosen to illustrate our use of NAEP data with the table for the indicator on student performance in mathematics and science.

Average Mathematics and Science Performance of 9-, 13-, and 17-Year-Olds, 1970-82.

Mean Percentage of Correct Responses

Mathematics

Age Group	1972-73	1977-78	Change	1977-78	1981-82	Change
9-year-olds	38.1	36.8	-1.3	55.4	56.4	1.0
13-year-olds	52.6	50.6	-2.0	56.6	60.5	3.9
17-year-olds	51.7	48.1	-3.6	60.4	60.2	-0.2

Science

Age Group	1969-70	1972-73	Change	1972-73	1976-77	Change
9-year-olds	60.6	58.8	-1.8	52.3	52.2	-0.1
13-year-olds	58.8	56.9	-1.9	54.5	53.8	-0.7
17-year-olds	44.2	42.8	-1.4	48.4	46.5	-1.9

Age Group	1976-77	1981-82	Change
9-year-olds	--	--	--
13-year-olds	52.8	52.4	-0.4
17-year-olds	61.7	59.7	-2.0

Source: National Assessment of Educational Progress, Three National Assessments of Science: Changes in Achievement, 1969-77 (Report No. 08-S-00), June 1978. National Assessment of Educational Progress, The Third National Mathematics Assessment: Results, Trends and Issues (Report No. 13-MA-01), April 1983. Science Assessment and Research Project, Images of Science, A Summary of Results from the 1981-82 National Assessment in Science, 1983.

In another example of follow-up on initial identification work, we can offer an improved indicator taken from the Second International Mathematics Study. In last year's publication, U.S. performance was contrasted with the mean performance of 8th and 12th grade students. This year, scores from the participating countries/provinces are available and we shall be able to show in considerably more detail how our students fared, relative to their peers elsewhere. Last year's indicator follows:

Eighth Grade Mathematics Achievement

	Mean Percent Correct		
	U.S.	Eighteen Countries*	
Topic		Low Quartile	Median
Arithmetic	51	45	51
Algebra	43	39	43
Geometry	38	38	43
Statistics	57	52	57
Measurement	42	47	51

Twelfth Grade College Preparatory Mathematics Achievement

	Mean Percent Correct		
	U.S.	Eighteen Countries*	
Topic		Low Quartile	Median
Sets, Relations	56	51	62
Number Systems	40	40	50
Algebra	43	47	57
Geometry	31	33	42
Functions, Calculus	29	28	44
Statistics	40	38	50
Finite Math	31	n. a.	44

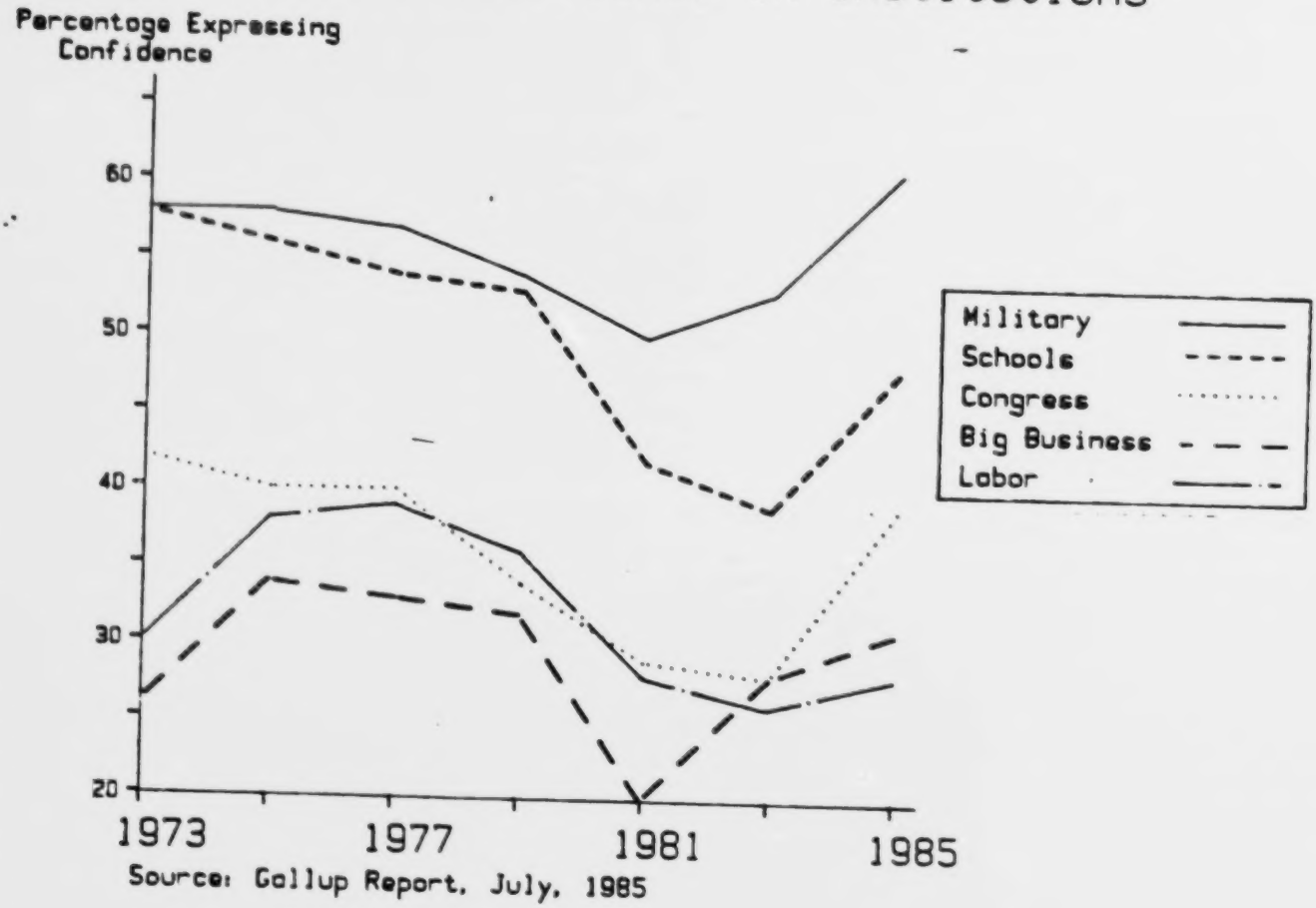
Source: Second International Mathematics Study
Interim Summary Report for the United States
(April 1984)

*Median score of 18 countries: Belgium (Flemish and French), Canada (British Columbia and Ontario), England, Finland, Hong Kong, Hungary, Israel, Japan, Luxembourg, Netherlands, New Zealand, Nigeria, Scotland, Swaziland, Sweden, Thailand, and the United States.

(n.a.) not available.

A concluding example of identification that has taken us beyond the 1985 indicators is drawn from the most recent Gallup Poll -- a source, incidentally, of several indicators to be covered in the Context category. Last year, one indicator presented public opinion ratings over time of schools. We shall provide this again in 1986, but also show the public's confidence in other institutions as well, such as the Congress, the military and big business. We believe that while depicting the assessment by the public of its educational institutions is important, it is important to show these variations in the context of changing views about other organizations that affect our lives. A draft chart is here displayed.

Public Confidence In Institutions



Source: Gallup Report, July, 1985

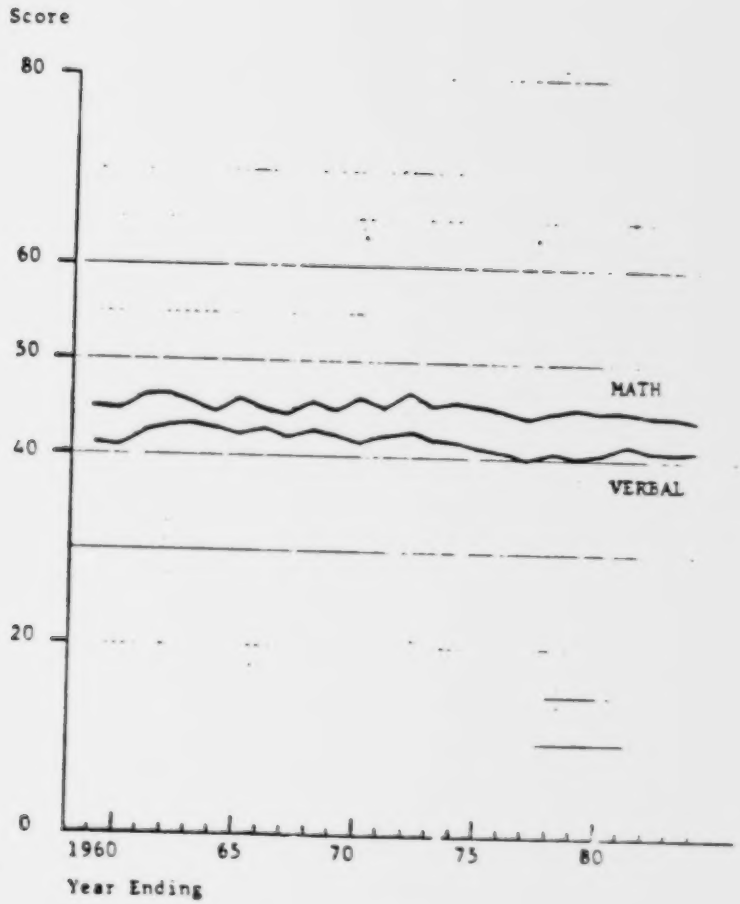
Analysis

Identifying an indicator goes far beyond merely locating data. In one sense, there is an abundance of data. Having some data is usually not the issue. We can turn to the Center's publication, The Digest of Education Statistics, or go directly to the data tapes of various surveys for the most up-to-date statistics. (In another sense, there are gross data deficiencies, but that shall be addressed later in this paper.) But the question for us is, "Is it an indicator?" To answer that question, assessment on at least a preliminary level must always accompany our research. And this assessment must yield an affirmative response to the basic question, at least to the staffer's satisfaction, to offer a go-ahead signal for the pursuit of more substantive analysis. This section will deal with examples of indicators that entail more extensive analysis.

Media attention in recent years to student performance on the Scholastic Aptitude Test (SAT) and the American College Testing Program (ACT) have helped to create in the mind of the average educated reader an association between performance on these tests and general educational quality. That association has been reinforced by the U.S. Secretary of Education issuing this winter for the third year in a row the so-called "wallchart" ("Education Statistics: Student Performance, Resource Inputs, and Population Characteristics, 1982 and 1985," prepared by the U.S. Department of Education, Office of Planning, Budget, and Evaluation, February, 1986). The 1985 indicators publication featured the SAT and ACT scores too, as did the 1985 edition of the Condition of Education.

We believe strongly that these test results are valid indicators, but we also believe that the accompanying narrative must clarify their limitations. The tests show the scholastic aptitude of juniors in high school, most of whom plan to go on to college. They are not measures applicable to all graduating seniors. Moreover, to balance the well known story of the long decline between 1963 and 1980 of SAT scores, we are considering printing as an indicator, the PSAT scores for the same period. The PSAT is similar to the SAT because it uses old SAT items and similar scoring procedures. The chart which follows shows the remarkable stability of the PSAT scores in contrast to the SAT decline. This difference in the test outcomes raises in our minds questions about the presumed similarity between the PSAT and SAT testing populations.

Average Annual Scores on the Preliminary Scholastic Aptitude Test, 1959-84



Source: Admissions Testing Program of the College Board

The 1985 indicators publication featured as an outcome a comparison of the activities of high school graduates from the class of 1972 and those of the class of 1980. (Data are from the Center's longitudinal surveys of high school students into young adulthood.) For this year's publication, another dimension is under consideration -- contrasting the stated plans of seniors in each cohort year to the actual activities that occupied them a year after graduation. While plans and activities had been reported separately, they had not been compared. This is being done for the 1986 publication. Because this new indicator candidate is still under review in the Department, the findings cannot be presented at this time.

Teacher quality in recent years is an issue that has moved from an academic concern of the few to the focus of attention for a great many policymakers and legislators. To attract better teachers, State legislatures throughout the country are adopting staffing reforms, raising salaries, and instituting new testing requirements. All of these activities were addressed in the 1985 indicators publication and are being updated for the 1986 edition. A year ago, as a surrogate for teacher quality the publication also presented a study by professors Victor Vance and Phillip Schlechty, funded by NIE and using data from the Center's 1972 longitudinal survey. That study contrasted the SAT scores of all 4- and 5- year bachelor's recipients in the survey sample with the scores of students who became teachers and then left or who became teachers and remained in the profession three years after college.

The staff member examining this indicator has approached it in two ways. First, since SAT scores were available for only a small portion of the survey sample, he looked at student performance on other tests, including the test taken by all participants in the longitudinal study. Second, he has analyzed the original data for statistical significance. This revised indicator is proposed for the forthcoming edition and because it has not yet received Departmental clearance, the data on the indicator cannot be reported here. The staff member responsible for the analysis is preparing a CS bulletin which will address this issue in greater detail than will be in the Condition of Education.

I alluded earlier to the anomaly of too much and too little data. Until now, those of us involved with indicator work have first thought through what were suitable indicator constructs and then gone in search of the data. That has been the modus operandi of the ELC task force, the Under Secretary's Work Group, and the current indicators team. Consequently, the content of the 1985 indicator publication and of the new Condition of Education was essentially determined by what was available. Some of the resulting indicators are

straightforward, like those on unemployment and income by educational attainment. Some like the SAT verbal scores of teachers are admittedly surrogates for preferred data which do not exist. Like Thursday's child, we know that we have "far to go."

Development

Our developmental work this year occurred for single indicators and for whole arrays. One new indicator, that for school climate, was prepared through an extensive original analysis of a 1984 survey of teachers and administrators. The study was carried out at schools in the 1980 High School and Beyond (HS&B) longitudinal study sample under the auspices of the Consortium for the Study of Effective Schools. This group is comprised of five educational research centers funded by the NIE.

From the research data, the analyst responsible for this indicator used a factor analysis of about 60 items to develop scales of school climate in public and Catholic high schools. Item analysis identified the sets of items with the highest reliabilities. Based on teacher reports, the following climate dimensions were developed: principal leadership; staff cooperation; student behavior; participation in decisionmaking; and staff morale. Because school climate is a new indicator whose results will be reported for the first time in a few months, it is not possible to include it in this paper. But we are pleased that, in contrast to last year when we could only have a placeholder narrative on the subject, this year we shall offer a statistically valid measure of school climate in a nationally representative sample of high schools at a given time.

At the same time, we recognize that as an indicator, our school climate presentation has its limitations. The survey will not be replicated and, in any event, the survey had not been designed specifically to yield data on school climate. There is considerable work yet to do on developing an indicator of school climate that can track changes over time. But our present indicator should help point the way.

Our major developmental effort this year focused on postsecondary education indicators. The 1985 indicators publication had only three post-high school indicators and only one dealing specifically with college. To begin the process of correcting that imbalance, a paper was commissioned that would conceptualize an approach to dealing with this issue and also would identify a range of indicator candidates. Last October, we received a completed draft by Dennis P. Jones of the National Center for Higher Education Management Systems. Fortunately, the perspective of the paper was not limited to items for which

data are already available. Rather, it ranged across the American higher education scene, identifying key issues and extrapolating 35 candidates, placing them within our established categories of Outcomes, Resources and Context.

Within outcomes, the author proposed indicators for student performance, employment rates, economic return, discipline and research outcomes, and social impact. Under Resources, he proposed descriptors of the system of higher education, financial resources, and other resources such as faculty, facilities, and equipment. For Context indicators, the author suggested descriptions of demography, the affordability of education, and the political environment including appropriations and public opinion about higher education.

The Jones' paper is proving critical to our indicator development effort. At a minimum, it has suggested those indicators that are being proposed for the forthcoming publication. We estimate there will be some 10-12 indicators on higher education in contrast to last year's single indicator. Our choices, of course, have been limited to those items for which data exist and by the time available to do the basic assessment. We consider them as yet to be far from the ideal set of higher education indicators.

To help us in our assessment for immediate use and for long term development, we followed the procedure started by the work group back in 1984 and reached outside the Department to obtain other perspectives of the Jones' candidates. A timely opportunity was available through the Center's contract with the American Council on Education (ACE) to provide advice on Center endeavors via an advisory panel. The ACE Advisory Panel on Postsecondary Education met last November. The proposed indicators were discussed in small groups and recommendations were reported in plenary session. A summary of the meeting is attached to this report. In addition, the staff conferred informally with staff of the National Conference of State Legislatures (NSCL) and the National Governor's Association (NGA).

FUTURE STEPS

The higher education indicators paper is also providing the basis for long range development in this category of indicators. Data for only about one-third of the proposed indicators exist or are collected on a regular basis. So that data bases will be developed for future indicators, our five year plan, now being prepared, calls for a number of actions to be taken. They range from including new questions on established or proposed Center survey questionnaires to commissioning papers or studies on indicator topics that require further conceptualization.

Two examples of development efforts emerged even before the Jones' paper was commissioned. The first deals with remedial education and the second with teacher data. As noted earlier, the indicator published last year on remedial education in higher education institutions came from a one-time Center survey. Because it is considered such a valuable indicator, we are negotiating with the Center's Division of Postsecondary Education Statistics to use regular surveys to obtain that information on a continuing basis.

The second example pertains to teacher data. Over a year ago, a in-house task force critiqued the Center's data-gathering on teachers and made a number of proposals. These proposals were incorporated into a major request for proposals (RFP) issued by the Elementary and Secondary Education Division (ESED) which subsequently awarded the contract to the Rand Corporation. While not initiated by the indicators project, the anticipated teacher survey design from Rand is expected to lead to considerably improved data for teacher indicators, especially regarding supply and demand, compensation, and qualifications.

For the short term, indicator development will continue on a piecemeal basis and the examples I have offered illustrate our current tack. Soon, however, we believe the environment will be more conducive to indicator development. Several current activities within the Center for Statistics are likely to produce much improved data for indicator purposes.

The Center is in the midst of a fundamental redesign of its elementary and secondary data collection program. Some months ago, the Center sought expertise outside the agency and commissioned papers to critique its work, conceptually and substantively. These critiques and comments were summarized in a synthesis report which was issued last September ("Synthesis of Invited Papers: Elementary/Secondary Education Data Redesign Project -- A Public Discussion Draft," edited by Leslie J. Silverman and Richard C. Tauber). Shortly thereafter, a commissioned design based on these papers was prepared ("Alternatives for a National Data System on Elementary and Secondary Education," by G. Hall, R.M. Jaeger, C.P. Kearney, and D.E. Wiley).

In summary, the report criticized the Center's program as lacking in comprehensiveness, integration, accuracy, comparability, representativeness, and timeliness. This is not the place to detail the Center's response to this criticism, or to the design developed by the consultants to the Center. But I shall note that a small work group assembled in this agency has prepared the broad outline of a plan to correct the deficiencies and the plan is now available for comment.

The cornerstone of the new system entitled, "The Elementary/Secondary Integrated Data System (ESIDS)," would be a nationally representative sample of 4,200 public and private schools from which annual data on teachers, school adminstrators, students, and parents would be collected. That data would include outcome data, for the plan also calls for administering cognitive tests in these schools.

The indicators staff has been represented on this in-house planning task force and we expect continued participation in the more detailed planning phases leading toward implementation. Through this participation, we shall have some resources to begin designing indicators before the data are even collected. Membership on the elementary and secondary redesign task force is by no means the only example of our involvement in data expansion and improvement. Another staff person has been working with ESED on a regular basis to be sure our interests are adequately represented in assignments to the contractor developing the new staffing survey. We are also actively engaged with members of the Department's research unit -- the Office of Research (OR) in OERI -- to develop indicators of student progress in higher education.

Such involvement is not merely interest on our part and courtesy by the other units in the Center and elsewhere. Rather, under the terms of the reorganization, it is the Condition of Education Division's responsibility to maintain liaison with other CS divisions to help keep them aware of data needs by the public and to assist them in organizing survey changes to ensure the optimum relevance and usage of the data.

In conclusion, I would say the institutionalized indicators project seems to be off to a promising start in the Center. The Condition of Education report that will present the indicators in the coming years has lent its very name to the unit in which it is housed. This illustrates, I believe, the high-level attention that is being paid to this enterprise. By the same token, it is an acknowledgement of the broad-based popular interest in "the condition of education" in the country today.

Measurement and assessment are key watchwords at this stage of the current reform movement. For its part, the Center for Statistics is capitalizing on the unique opportunity to demonstrate greater accountability by overhauling its data base so that it can provide the information called for in this present era. Within the Center, the indicators project can look forward to continued interest and support. This interest and support bring with them tremendous challenges and demands. In such dynamic circumstances, we are optimistic that we can continue to improve the coverage and quality of education indicators.

APPENDIX

Summary

APPE Meeting
November 7, 1985

On November 7, 1985, the first Advisory Panel on Postsecondary Education (APPE) meeting, for this year, was held. The purpose of the meeting was to help the Center for Statistics (CS) identify postsecondary indicators — based on existing data — that would appear in next June's Condition of Education. In addition, panel members identified indicators that would be candidates for further development. The indicators that were the basis of the discussion were identified in a paper commissioned by the Center and written by Dennis Jones of NCHEMS. The several categories of indicators were discussed in small groups and presented to the group at large. The proposed indicators and the groups' recommendations follow:

A. Proposed Indicators: Outcomes

1. Student Performance/Knowledge, Skills and Values

Recommendations: Generally, the group recommended that the Center should start conservatively. The indicators should be valid and comprehensive and multiple indicators should be used for all areas. In addition, it was suggested that an essay approach be used in order to explain any caveats. The group unanimously agreed that currently no measure exists and GRE scores were not recommended. It encouraged CS to look at NAEP-type testing and to adapt the NSF model for indicator development.

2. Behavorial Outcomes

a. Degrees conferred by level (HEGIS)

b. Transition rates to graduate school (NLS and HS&B or HEGIS)

c. Attrition/retention: bachelor's and associate degrees separately (NLS/HS&B).

Recommendations: Degrees conferred should be categorized not only by level but also by race/ethnicity, institutional type and by general fields.

Transition rates to graduate school was recommended; however, it should be noted that the HS&B and NLS surveys are only 2 or 3 data points and there is a decade in between. There are problems with the attrition and retention outcomes and it is best not to use. Instead, report the time it takes to complete a degree or certification.

3. Employment and Economic Return

   a. Unemployment rates: college educated vs. non-college educated (BLS).

   b. Economic benefits of college

   c. Income of full-time workers differentiated by educational attainment.

   Recommendations: Good indicator for employment outcomes. Also agreed that the salaries of recent college graduates by degree fields and groups of degrees would be useful. In addition, Center should also look at educational attainment by age levels and sex.

4. Discipline/Research Outcomes

   a. Adapt from National Science Board publication, Science Indicators

B. Proposed Indicators: Resources

1. System of Higher Education

   a. Institutional diversity (HEGIS)

      1. Count of institutions by control and type

      2. FTE student data for each sector (i.e., demand)

Recommendations: The group felt that it would be appropriate to break down the indicators by state rather than display the aggregate. In addition, CS should define what each indicator measures. Some indicators are too undeveloped; it is premature to try to include all indicators so quickly. The institutional diversity measures should be used and include all postsecondary education institutions, including proprietary schools.

The group also recommended using the FTE data for each sector as well as the headcount. In addition, a ratio of the two measures should be included. It was also noted that the use of FTE must include ways of translating into clock hours. The group felt the issue of access should also be addressed.

   b. Programmatic diversity

      1. Liberal arts vs. professional and vocationally oriented degrees (use categories in the Classification of Instructional Programs — CIP).

Recommendations: The indicators for programmatic diversity should include proprietary institutions and all types of degrees and certificates. However, rather than by liberal arts vs. professional degrees etc., it should be categorized by types of fields (e.g. science).

2. Financial Resources

a. Expenditure levels:

1. by control and type (HEGIS)

2. as proportion of the GNP

3. Higher Education Price Index (HEPI)

b. Financing Patterns: trend data regarding —

1. immediate sources of funds for institutions (HEGIS)

2. relative level of student support from various sources (CIRP).

c. Prices of education

1. Tuition price index of Brown, Kahl & Kriz cf. CPI

Recommendations: Very important to present the financial resource indicators by type, control and state over-time. Data should be collected on institutional revenue and there is a need for separate trend data on institutional support and student support.

Total expenditures by the type and control are very important and hospital expenditures should be pulled out. In addition, it is somewhat important to develop indicators to measure the increase in library acquisitions. It was recommended that the aggregate expenditures as a proportion of GNP indicator be presented in a trend line context in the Condition of Education. The HEPI should be put in context in relation to the CPI and research cost (NSF) indicators.

The group also recommended using the immediate sources of revenue particularly by type and control including proprietary institutions. They did not recommend using CIRP data to determine the relative level of student support. It was suggested that it is important to look at other existing data. It is extremely important to include student financial aid by source of support (i.e., State, federal, institutional support and by institutional control).

The group did not have a recommendation about the tuition price index because they were unfamiliar with it. If it is used, the indicator needs to be clearly defined and presented by institutional control and type.

3. Proposed Indicators: Other Resources

   a. Faculty Resources:

      1. Tenured full-time faculty. (HEGIS)

   b. Facility Resources:

      1. Calculate years to replace physical plant using HEGIS finance data on replacement value.

   c. Equipment Resources

      1. Calculate years to replace capital equipment using book value of equipment.

   d. Quality of incoming students:

      1. ACT/SAT scores

      2. Data on academic rank in high school (CIRP)

      3. Data on need for remedial work in various subject areas (CIRP)

4. Resources Utilization Measures

   a. Instructional expenditures per FTE student deflated by HEPI

   b. Expenditures by function.

Recommendations: The number of tenured faculty is not very important. More important — but the data are not now available — is the employment status of faculty (i.e. full-time and part-time). In addition, should look at faculty headcount and FTE.

Facility and equipment data are not very useful and should not be used for indicators.

There are limits in using test scores to determine the quality of incoming students. In addition, CIRP data should not be used because only full-time students are included in the survey. Furthermore, CIRP describes a very small proportion of community college students, who are mainly adults and attending on a part-time basis. It was noted that it is more appropriate to develop this type indicator at the

institutional level.

C. Proposed Indicators: Context

1. Demographic Context

a. Race/ethnicity gender of participants (HEGIS); develop participation rate using Census.

b. Compare first-time freshmen with the number of high school degrees granted (BLS).

c. Indicate full-time participation by type of institution (HEGIS); subsequently by student credit hours (SCH) (IPEDS).

d. Choice — e.g. show attendance at type of institution by ethnicity (HEGIS); by rank (CIRP)

Recommendations: Demographic context needs to describe what the college - age population will look like in the future. Suggested demographic indicators are: what percent of high school graduates go on to college, what proportion of the students are black/Hispanic compared to their numbers in the population and the age distribution of students. The group recommended using the participation rates by race and ethnicity and the comparison of first-time freshmen with the number of high school graduates. In addition, participation rates by age would be useful. The indicators on the full-time participation by type of institution and on choice (attendance by ethnicity) should be dropped as demographic indicators; rather, they are indicators of student choice. Proposed instead was an indicator of the likelihood of participation by sex, race, etc. Group also noted that demographic indicators ideally should be given for the nation and the States.

The group felt the best indicators were those that would be self-explanatory and "experiential". But the indicator should not "hide" data; components and methodology must appear in the Appendix.

2. Economic Context

a. Inflation in the economy cf. inflation in higher education (HEPI c.f. CPI).

b. Changes in rates between tuition price index and the personal disposal income index ("affordability").

Recommendations: Issue of concern to the group was, will these indicators deal with current policy issues or a longer period of time? If it is current policy, then it

is best dealt with as an issue paper or research. Group felt the HEPI/CPI to be of secondary importance. Rather, inflation should be looked at in relation to college costs.

The group agreed it was important to have an indicator on affordability, but felt the use of a tuition price index was not a good idea. Tuition does not reflect the price to the student and his/her family. Better to use the net price divided by family discretionary income.

The group then suggested what was needed was a measure of the relative investment in higher education at the Federal, state and local levels, i.e., higher education's "piece of the pie" compared to other sectors. It would be useful to show over time how the education sector fairs compared to other sectors competing for funds.

Another suggestion was the economic impact of the institution on the local market economy.

3. Political Context

a. Public opinion of higher education

b. State appropriation for higher education as a function of State tax capacity.

c. Dependency on a single source of funding

Advisory Panel On Postsecondary Education

November 7, 1985 Meeting

List of Attendees

Panel Members

Wendy Bruno
Douglas Conner
Salvatore Corallo
Charles Dickens
Marlyn Draxl (for Benjamin Massey)
Elaine El-Khawas
James Gollatscheck
Erica Gosman
Ray Haas
Janet Hansen
Rodney Hartnett
James Hyatt
Alice Irby
Dennis Jones
Richard King
Kay Kohl
Ron Leighton (for Stephen Blair)
Meredith Ludwig
Richard Millard
Michael O'Keefe
Samuel Pang
Joseph Popovich
Tom Redman (for David Spence)
Glenwood Rowse
Frank Schmidtlein
Paul Siegel
Jewel Stewart
Julianne Still Thrift
Joseph Vignone
John Wittstruck

ACE Staff

Mary Hayes
Cecilia Ottinger

CS STAFF

Curt Baker
MacKnight Black
Lee Eiden
Emerson Elliott
Chester Finn
Martin Frankel
Bill Freund
Ron Hall
D. Kent Halstead
Sharon Horn
Phil Kaufman
Roslyn Korb
Paul Martins
David Orr
Barbara Richardson
Larry Rudner
Iris Silverman
Tom Snyder
Joyce Stern
Jay Noell